



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,247	10/28/2003	Yee Loong Chin	70030429-1	7045
57299	7590	02/23/2006	EXAMINER	
AVAGO TECHNOLOGIES, LTD.			MONBLEAU, DAVIENNE N	
P.O. BOX 1920			ART UNIT	
DENVER, CO 80201-1920			PAPER NUMBER	
			2878	

DATE MAILED: 02/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

31

Office Action Summary

Application No.

10/696,247

Applicant(s)

CHIN ET AL.

Examiner

Davienne Monbleau

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-20 and 26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-20 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The amendment filed on 2/13/06 has been entered. Claims 1, 4, 7, 8, 12, and 15 have been amended. Claim 5 has been canceled. Claims 1-4, 6-20, and 26 are pending.

Claim Objections

Claim 6 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 6 recites that the light emitting diode is encapsulated. Claims 1 and 4, however, from which claim 6 depends, recite an encapsulated emitter that is a light emitting diode. Thus, since the emitter is a light emitting diode and the emitter is encapsulated, the light emitting diode has to be encapsulated. Therefore, claim 6 fails to further limit the parent claims.

Claims 8-14 are objected to as being dependent on an objected base claim.

Regarding claim 17, claim 17 recites the limitation "the encapsulation of the detector" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Regarding claim 18, the examiner believes that line 2 is intended to read "aperture between the *coder* and the imaging lens", which is how the original claim was written. (Otherwise, claim 18 and 19 are now the same). For purposes of examination, the Examiner will assume that the original claim language prevails.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

Art Unit: 2878

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4, 6-20, and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the phrase “the encapsulated emitter having an optical axis and emitting light that is offset from the optical axis” is indefinite because it is not clear whether the “optical axis” is that of the emitter itself or rather the encapsulation and emitter taken together. This indefiniteness creates further confusion in dependent claims that refer back to the optical axis and particular element arrangements.

Regarding claims 8-10 and 12-14, as stated above, the arrangement of the elements in relation to the optical axis is indefinite because it is not clear to which element the optical axis refers. Thus, claims 8-10 and 12-14 are also indefinite because the recited claim limitations fail to remedy the indefiniteness of claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

Art Unit: 2878

the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4, 6-17, and 26, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Burrowes (U.S. 4,587,513) in view of Uebbing et al. (U.S. 5,317,149) and Gordon-Ingram (U.S. 6,603,115).

Regarding Claim 1, *Burrowes* teaches in Figure 1 a reflective imaging encoder comprising an emitter (16) emitting light, a diffuse reflective coder (15) reflecting light from the emitter (16), an imaging lens (20) forming an inverted imaging of the reflected light from the coder (15), and a detector (22) receiving the inverted image from the imaging lens (20).

Burrowes does not teach that the emitter (16) and the detector (22) are mounted on a common substrate or that the emitter is encapsulated. *Uebbing* teaches in Figure 2 that the emitter (8) and the detector (12) are mounted on a common substrate (4) and that the emitter (8) and an encapsulant (2), wherein the encapsulated emitter (8) has an optical axis and emits light that is offset from the optical axis. It would have been obvious to one of ordinary skill in the art at the time of the invention to mount the emitter and detector on a common substrate and encapsulate the emitter in *Burrowes*, as taught by *Uebbing*, to provide an integrated system, stabilize alignment, and shield the emitter from external environmental effects. *Burrowes* does not teach that the detector is an imaging detector. *Gordon-Ingram* teaches in Figure 1 an absolute position encoder comprising a CCD detector (5) and further teaches in column 5 lines 34-37 that any array of photodetectors could be used, as well as other bit detectors. It would have been obvious to one of ordinary skill in the art at the time of the invention to use an imaging detector in

Art Unit: 2878

Burrowes, as taught by *Gordon-Ingram*, based on the desired detector characteristics. *Burrowes* does not teach a light baffle. It would have been obvious, however, to one of ordinary skill in the art at the time of the invention to use a light baffle in *Burrowes*, to prevent ambient light from affecting the measurements, thus improving overall detection accuracy and minimizing noise.

Regarding Claim 2, *Burrowes* as modified by *Uebbing* and *Gordon-Ingram* teaches (*Gordon-Ingram*: column 5, lines 34-37) that the image detector is a photodiode array (i.e. photodetector array).

Regarding claim 3, *Burrowes* as modified by *Uebbing* and *Gordon-Ingram* teaches (*Gordon-Ingram*: column 5, lines 34-37) that the image detector is a CMOS imaging sensor.

Regarding Claim 4, *Burrowes* teaches in column 4 lines 8-9 that the emitter (16) is a light emitting diode.

Regarding Claim 6, see discussion on claim 1.

Regarding Claim 7, *Burrowes* as modified by *Uebbing* and *Gordon-Ingram* teach that the emitter is an LED, but do not teach that it is packaged LED. It would have been obvious, however, to one of ordinary skill in the art at the time of the invention to use a packaged LED in *Burrowes* to stabilize the characteristics of the light source system (i.e. temperature control).

Regarding Claim 8, *Burrowes* as modified by *Uebbing* and *Gordon-Ingram* teaches (*Uebbing*: Figure 2) that the encapsulation (2) forms an optical axis.

Regarding Claim 9, *Burrowes* as modified by *Uebbing* and *Gordon-Ingram* teaches (*Uebbing*: Figure 2) that the light emitting diode (8) is mounted on the optical axis.

Regarding Claim 10, *Burrowes* as modified by *Uebbing* and *Gordon-Ingram* teaches (*Uebbing*: Figure 4) that the light emitting diode (8) is mounted offset from the optical axis.

Regarding Claim 11, *Burrowes* as modified by *Uebbing* and *Gordon-Ingram* does not teach that the LED includes a reflector cup. It would have been obvious, however, to one of ordinary skill in the art at the time of the invention to use a reflector cup in *Burrowes* to optimize the direction of light onto the encoder and prevent loss.

Regarding Claim 12, see discussion on Claim 8.

Regarding Claim 13, see discussion on Claim 9.

Regarding Claim 14, see discussion on Claim 10.

Regarding Claim 15, *Burrowes* as modified by *Uebbing* and *Gordon-Ingram* teaches (*Uebbing*: Figure 1) that said emitter (16) is an LED, but does not teach using a plurality of LEDs. It would have been obvious, however, to one of ordinary skill in the art at the time of the invention to use a particular light source or arrangement in *Burrowes*, to optimize cost, efficiency, signal output, or any other desired characteristic.

Regarding Claim 16, *Burrowes* teaches in Figure 1 that imaging lens (20) is separate from the detector (22).

Regarding Claim 17, *Burrowes* does not teach that the lens is incorporated into an encapsulation for the detector. *Uebbing* teaches in Figure 2 that the imaging lens (6) is incorporated into the encapsulation (2) of the detector (12). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the imaging lens into the

Art Unit: 2878

encapsulation in *Burrowes*, as taught by *Uebbing*, to stabilize the alignment of the optical elements and provide a compact and integrated system.

Regarding Claim 26, *Burrowes* teaches in Figure 1 that the detector (22) is mounted on the optical axis of the imaging lens (20).

Claims 18-20, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Burrowes in view of Uebbing and Gordon-Ingram, as applied to claim 1 above, and in further view of McQueen (U.S. 2002/0195550).

Regarding Claim 18, *Burrowes* as modified by *Uebbing* and *Gordon-Ingram* does not teach an aperture between the coder and the imaging lens. *McQueen* teaches in Figure 1 a code reading system comprising an aperture (110) between a coder (114) and an imaging lens (112). It would have been obvious to one of ordinary skill in the art at the time of the invention to use an aperture in *Burrowes*, as taught by *McQueen*, to adjust the depth of field for the device. (See *McQueen* paragraph [0041]).

Regarding Claims 19 and 20, see discussion on Claim 18. Although *McQueen* does not teach these specific aperture arrangements, it would have been obvious to one of ordinary skill in the art the time of the invention to use a particular aperture configuration to have an imaging device with certain focusing characteristics.

Response to Arguments

Applicant's arguments filed 2/13/06 have been fully considered but they are not persuasive. In particular, Applicant argues that *Uebbing* fails to teach an "encapsulated emitter mounted on the substrate, the encapsulated emitter having an optical axis and emitting light that

Art Unit: 2878

is offset from the optical axis.” As discussed above, however, this phrase is indefinite because it is not clear whether the “optical axis” is that of the emitter itself or rather the encapsulation and emitter taken together. This determination and clarity is necessary in order to understand the structural relationship of the elements, especially since there are dependent claims that attempt to further define this relationship. Thus, since the limitation regarding the “optical axis” is not clear, the Examiner maintains the rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 571-272-1945. The examiner can normally be reached on Monday through Friday 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Davienne Monbleau

DNM

Stephane B. Allen
Stephane B. Allen
Primary Examiner